PATENT
Atty Docket No. HI03025USU (P04009US)

I. AMENDMENTS

A. TO THE CLAIMS

1. (Currently Amended) A method for ~~designing~~ creating a waveguide, the method comprising:

establishing a design metric based upon acoustic impedance;

dividing the waveguide into two or more sections;

setting initial design values; [and]

modifying the values for each section in accordance with the design metric; and

creating a waveguide in accordance with the modified values.

2. (Original) The method of claim 1, further comprising concatenating the sections together.

3. (Original) The method of claim 2, further smoothing the sections that are concatenated together.

4. (Currently Amended) The method of claim 1, where the design metric based upon acoustic impedance is the change in acoustic reactance between the sections of the waveguide.

5. (Currently Amended) The method of claim 1, where the design metric based upon acoustic impedance is the change in acoustic resistance between the sections of the waveguide.

6. (Currently Amended) The method of claim 1, where the design metric based upon acoustic impedance is the minimum change in acoustic resistance between the sections of the waveguide.

7. (Currently Amended) The method of claim 1, where the waveguide is a transducer diaphragm.

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8. (Currently Amended) The method of claim 7, where the design metric based upon acoustic impedance is the change in acoustic impedance measured between the sections of transducer diaphragm.

9. (Original) The method of claim 1, where the waveguide is divided into five sections.

10. (Original) The method of claim 1, where the waveguide is divided into ten sections.

11. (Currently Amended) The method of claim 1, where the waveguide has a throat and a mouth and where the initial design values are dimensions of the throat and [the] initial slopes of the waveguide on [the] a major and a minor axis of the waveguide.

12. (Currently Amended) The method of claim 8, where [the] initial slopes of the waveguide along a major and a minor axis are modified in accordance with the design ~~metrics~~ metric based upon acoustic impedance.

13. (Currently Amended) The method of claim 9, where the slopes of each section of the waveguide are modified in accordance with the design metric based upon acoustic impedance.

14. (Original) The method of claim 1, where the waveguide is a port tube.

15. (Original) The method of claim 1 where the waveguide is designed for [the] use in connection with a loudspeaker.

16. (Original) The method of claim 1 where the waveguide is designed for use in a radar application.

17. (Original) The method of claim 1 where the waveguide is designed for use in a communications application.

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18. (Currently Amended) A method for ~~designing~~ creating a waveguide, the method comprising:

developing an initial waveguide profile with two or more different exponential slopes concatenated together;

modifying the slopes based upon a design metric based upon acoustic impedance; [and]

smoothing the modified slopes based upon a polynomial order curve fit; and

creating a waveguide in accordance with the smoothed modified slopes.

19. (Currently Amended) The method of claim 18, where the design metric based upon acoustic impedance is the change in acoustic reactance between the sections of the waveguide.

20. (Currently Amended) The method of claim 18, where the design metric based upon acoustic impedance is the change in acoustic resistance between the sections of the waveguide.

21. (Currently Amended) The method of claim 18, where the design metric based upon acoustic impedance is the minimum change in acoustic resistance between the sections of the waveguide.

22. (Currently Amended) The method of claim 18, where the waveguide is a transducer diaphragm.

23. (Currently Amended) The method of claim 18, where the design metric based upon acoustic impedance is the change in acoustic impedance measured between the sections of transducer diaphragm.

24. (Original) The method of claim 18, where the waveguide is divided into five sections.

25. (Original) The method of claim 18, where the waveguide is divided into ten sections.

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26. (Original) The method of claim 18, where the waveguide has a throat and a mouth and where the initial waveguide profiles with two or more different exponential slopes concatenated together are designed by using initial design values.

27. (Currently Amended) The method of claim 26, where the initial design values are [the] size of the throat and [the] initial slopes of the waveguide on [the] a major and a minor axis of the waveguide.

28. (Original) The method of claim 18, where the waveguide is a port tube.

29. (Original) The method of claim 18 where the waveguide is designed for [the] use in connection with a loudspeaker.

30. (Original) The method of claim 18 where the waveguide is designed for use in a radar application.

31. (Original) The method of claim 18 where the waveguide is designed for use in a communications application.

32. (Currently Amended) A method for ~~designing~~ creating a waveguide for use in connection with a loudspeaker, the method comprising:

developing an initial waveguide profile with two or more different exponential slopes concatenated together by using initial design values for the waveguide;

modifying the concatenated slopes of the waveguide using the minimum change in acoustic resistance between the sections of the waveguide; [and]

smoothing the modified slopes based upon a polynomial order curve fit; and

creating a waveguide in accordance with the smoothed modified slopes.

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33. (Currently Amended) The method of claim 32, where the waveguide is a transducer diaphragm.

34. (Original) The method of claim 32, where the waveguide is divided into five sections.

35. (Original) The method of claim 32, where the waveguide is divided into ten sections.

36. (Original) The method of claim 32, where the initial design values are [the] size of the throat and [the] initial slopes of the waveguide on [the] a major and a minor axis of the waveguide.

37. (Original) The method of claim 32, where the waveguide is a port tube.

38. (Currently Amended) A method for ~~designing~~ creating a waveguide for use in connection with a loudspeaker, the method comprising:

developing an initial waveguide profile with two or more different exponential slopes concatenated together by using initial design values for the waveguide;

modifying the concatenated slopes of the waveguide using the change in acoustic resistance between the sections of the waveguide; [and]

smoothing the modified slopes based upon a polynomial order curve fit; and

creating a waveguide in accordance with the smoothed modified slopes.

39. (Currently Amended) The method of claim 38, where the waveguide is a transducer diaphragm.

40. (Original) The method of claim 38, where the waveguide is divided into five sections.

41. (Original) The method of claim 38, where the waveguide is divided into ten sections.

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42. (Currently Amended) The method of claim 38, where the initial design values are [the] size of the throat and [the] initial slopes of the waveguide on [the] a major and a minor axis of the waveguide.

43. (Original) The method of claim 38, where the waveguide is a port tube.

44. (Currently Amended) A method for creating a waveguide, the method comprising:

executing instructions obtained from a [A] signal-bearing medium having software for designing a waveguide, the signal-bearing medium comprising:

logic configured for establishing a design metric based upon acoustic impedance;

logic configured for dividing the waveguide into two or more sections;

logic configured for setting initial design values; and

logic configured for modifying the values for each section in accordance with the design metric; and

creating a waveguide in accordance with the modified values.

45. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, the signal-bearing medium further comprising logic configured for concatenating the sections together.

46. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 45, the signal-bearing medium further comprising logic configured for smoothing the sections that are concatenated together.

47. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the design metric is the change in acoustic reactance between the sections of the waveguide.

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48. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the design metric is the change in acoustic resistance between the sections of the waveguide.

49. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the design metric is the minimum change in acoustic resistance between the sections of the waveguide.

50. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the waveguide is a transducer diaphragm.

51. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 50, where the design metric is the change in acoustic impedance measured between the sections of transducer diaphragm.

52. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the waveguide is divided into five sections.

53. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the waveguide is divided into ten sections.

54. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the waveguide has a throat and a mouth and where the initial design values are dimensions of the throat and the initial slopes of the waveguide on the major and minor axis of the waveguide.

55. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 51, where [the] initial slopes of the waveguide along major and minor axis are modified in accordance with the design metrics.

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56. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 52, where [the] slopes of each section of the waveguide are modified in accordance with the design metric.

57. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the waveguide is a port tube.

58. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the waveguide is designed for [the] use in connection with a loudspeaker.

59. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the waveguide is designed for use in a radar application.

60. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 44, where the waveguide is designed for use in a communications application.

61. (Currently Amended) A method for creating a waveguide, the method comprising:

executing instructions obtained from a [A] signal-bearing medium having software for designing a waveguide, the signal-bearing medium comprising:

logic configured for developing an initial waveguide profile with two or more different exponential slopes concatenated together;

logic configured for modifying the slopes based upon a design metric based upon acoustic impedance; and

logic configured for smoothing the modified slopes based upon a polynomial order curve fit; and

creating a waveguide in accordance with the smoothed modified slopes.

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62. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 61, where the design metric is the change in acoustic reactance between the sections of the waveguide.

63. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 61, where the design metric is the change in acoustic resistance between the sections of the waveguide.

64. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 61, where the design metric is the minimum change in acoustic resistance between the sections of the waveguide.

65. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 61, where the waveguide is a transducer diaphragm.

66. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 61, where the design metric is the change in acoustic impedance measured between the sections of transducer diaphragm.

67. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 61, where the waveguide is divided into five sections.

68. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 61, where the waveguide is divided into ten sections.

69. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 61, where the waveguide has a throat and a mouth and where the initial waveguide profiles with two or more different exponential slopes concatenated together are designed by using initial design values.

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70. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 69, where the initial design values are [the] size of the throat and [the] initial slopes of the waveguide on [the] a major and a minor axis of the waveguide.

71. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim 61, where the waveguide is a port tube.

72. (Currently Amended) The ~~signal-bearing medium~~ method for creating a waveguide of claim [61] 61, where the waveguide is designed for [the] use in connection with a loudspeaker.

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